

Vocabulary Sheet Standard Form

Vertex form	$f(x) = Ax^2 + Bx + C$
Vertex	<ul style="list-style-type: none"> Find x-coordinate $h = \frac{-b}{2a}$ Find y-coordinate k by $f(h)$ Write vertex a (h, k)
Axis of symmetry	<ul style="list-style-type: none"> Vertical line that divides the graph in half. Equation of the line: $x = h$
Leading Coefficient	<ul style="list-style-type: none"> a Leading coefficient is positive graph opens up. Leading coefficient is negative graph opens down.
y-intercepts	<ul style="list-style-type: none"> Plug in 0 for x Always c Written (0, c)
x-intercepts, roots, zeros	<ul style="list-style-type: none"> When $f(x) = 0$ Can find using quadratic formula or by factoring Written (x, 0)

Directions: Mark up the following steps to graph a quadratic in Standard form. Use these steps to graph the function on the link sheet.

$$f(x) = x^2 - 6x + 8$$

Step 1: Find the x-coordinate of the vertex using the formula $h = -b/2a \rightarrow h = \frac{6}{2(1)} = 3$

Step 2: Plug the value of h into the function f(x) to get your k. $\rightarrow k = (3)^2 - 6(3) + 8 = -1$

Now you have your vertex: (3, -1)

Step 3: Make a table of values with your vertex in the middle.

Step 4: Pick x values around your vertex to create the table.

Step 5: Plug in your x values to complete the table.

Step 6: Plot your points and graph.

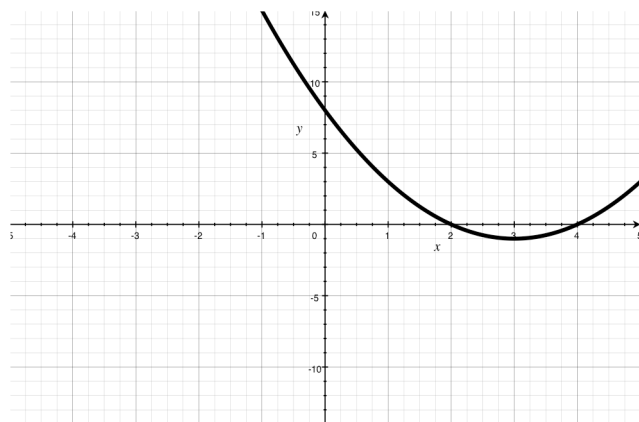
x	f(x)
1	3
2	0
3	-1
4	0
5	3

$$f(1) = (1)^2 - 6(1) + 8 = 3$$

$$f(2) = (2)^2 - 6(2) + 8 = 0$$

$$f(4) = (4)^2 - 6(4) + 8 = 0$$

$$f(5) = (5)^2 - 6(5) + 8 = 3$$



Solving Equations in Standard Form

Example	Steps
$\begin{array}{r} 3x^2 + 8x - 9 = 2x \\ -2x \quad -2x \\ \hline 3x^2 + 6x - 9 = 0 \end{array}$ $x = \frac{-6 \pm \sqrt{(6)^2 - 4(3)(-9)}}{2(3)}$ $x = \frac{-6 \pm \sqrt{144}}{6}$ $x = \frac{-6 \pm 12}{6}$ $x = \frac{-6 + 12}{6} \quad x = \frac{-6 - 12}{6}$ $x = \frac{6}{6} \quad x = \frac{-18}{6}$ $x = 1 \quad x = -3$	<ol style="list-style-type: none">1. Make equation = 02. Label a, b, c.3. Plug into the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$4. Simplify the discriminant (under the square root)5. Take the square root.6. Break into two equations and solve for x.